

THE EFFECTIVENESS OF SMOKING PREVENTION MODULE TOWARDS KNOWLEDGE AND SMOKING REFUSAL SKILL AMONG SECONDARY SCHOOL STUDENTS IN KOTA BHARU, KELANTAN

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“Magic happens when you do not give up, even though you want to”.

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TABLE OF CONTENT

ACKNOWLEDGEMENT	i
TABLE OF CONTENT	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF APPENDICES	vi
ABBREVIATIONS	vii
ABSTRAK	viii
ABSTRACT	xi
CHAPTER 1 INTRODUCTION	1
1.1 Rationale of the Study	2
CHAPTER 2 LITERATURE REVIEW	4
2.1 Prevalence of Smoking among Adolescents and its Associated Factor	4
2.2 Knowledge and Attitude on Smoking Prevention among Adolescents	7
2.3 Smoking Prevention Programmes	8
2.4 Refusal skill in smoking among adolescents	13
2.5 Conceptual framework.....	16
CHAPTER 3 OBJECTIVES	17
3.1 General objective	17
3.2 Specific objectives:	17
3.4 Research Hypothesis	17
3.5 Operational Definition	18
CHAPTER 4 METHODOLOGY	19
4.1 Study Design.....	19
4.2 Study Duration	19
4.3 Study Area	19
4.4 Population and Sample	20
4.5 Research Tools and Implementation	24
4.6 Data Collection Procedure	36
4.8 Statistical Analysis.....	41
4.9 Ethical Consideration.....	41
CHAPTER 5 RESULTS.....	42
5.1 Sociodemographic Characteristics of the Respondents	42
5.2 Knowledge on Smoking and its Harmful Effects	45

5.3 The Smoking Refusal Skill Score	48
CHAPTER 6 DISCUSSION	51
6.1 Principal Findings	59
6.1.1 Knowledge and Its Harmful Effects	59
6.1.2 The Smoking Refusal Skills among the Adolescents	67
CHAPTER 7 CONCLUSION	72
CHAPTER 8 STUDY LIMITATION	73
CHAPTER 9 RECOMMENDATIONS	74
CHAPTER 10 REFERENCES	75
CHAPTER 11 APPENDICES	83

LIST OF TABLES

Table 4.1 : The summary of the smoking prevention module	29
Table 4.2 : Retained items after pilot test	34
Table 4.3 : The comparison between package for intervention group and package for control group	36
Table 5.1 : Socio-demographic characteristics of the subjects	44
Table 5.2 : Baseline score on knowledge on smoking and its harmful effects (independent t test)	45
Table 5.3: Comparison in mean score difference of knowledge on smoking and its harmful effects among intervention and control group based on time (time-treatment interactions)	47
Table 5.4 : Baseline smoking refusal skill score comparison between control and intervention group (independent t test)	48
Table 5.5 : Comparison in mean score difference of smoking refusal skill among intervention and control group based on time (time-treatment interactions)	50

LIST OF FIGURES

Figure 2.1 Conceptual framework	16
Figure 4.1 Study flowchart	40

LIST OF APPENDICES

Appendix A : ‘Tubuh Perokok’ activity ('smoker's body' activity)	84
Appendix B : ‘Ambo Tok Sey Hisap Rokok’ activity ('I don't want to smoke' activity).....	85
Appendix C : Scenario card	86
Appendix D : Role cards	87
Appendix E : Research questionnaires	88
Appendix F: Declaration form	93
Appendix G : Informed assent form (Malay version)	94
Appendix H : Parental consents (Malay version)	100
Appendix I : Ethical approval letter	107

ABBREVIATIONS

CDC	Centers for Disease Control and Prevention
FDA	Food and Drug Administration
GYTS	Global Youth Tobacco Survey
GATS	Global Adult Tobacco Survey
LdP	Luoghi di Prevenzione
MYTRI	Mobilizing Youth for Tobacco-Related Initiatives in India
TECMA	Tobacco & e-Cigarette Survey among Malaysian Adolescents

ABSTRAK

KEBERKESANAN MODUL PENCEGAHAN MEROKOK TERHADAP KEMAHIRAN PENGETAHUAN DAN SKIL PENOLAKAN AJAKAN MEROKOK DI KALANGAN PELAJAR SEKOLAH MENENGAH DI KOTA BHARU, KELANTAN.

Latar belakang kajian : Ketika ini, merokok di kalangan remaja sudah menjadi kebiasaan. Terdapat banyak program pencegahan merokok yang diwujudkan untuk mengurangkan bilangan merokok di kalangan remaja. Di Malaysia, selain aktiviti Kelab Doktor Muda, tiada modul pencegahan merokok untuk remaja lain yang diketahui umum buat masa ini. Selain itu, menilai keberkesanan program pencegahan merokok ini adalah sama penting untuk memastikan remaja mendapat faedah dari program – program berkenaan.

Objektif : Untuk mengkaji keberkesanan modul pencegahan merokok terhadap kemahiran pengetahuan dan skil penolakan ajakan merokok di kalangan pelajar sekolah menengah di Kota Bharu , Kelantan.

Kaedah : Satu kajian intervensi kuasi eksperimen telah dijalankan dari bulan Ogos hingga Oktober 2016, melibatkan 166 peserta yang bukan perokok, berumur 13 hingga 14 tahun. 83 pelajar dari SMK Kubang Kerian 3 berada di dalam kumpulan intervensi yang menerima modul pencegahan merokok. 83 pelajar dari SMK Ketereh telah berada

di dalam kumpulan kawalan yang hanya menerima modul pencegahan merokok selepas kajian ini selesai. Pengetahuan mengenai merokok dan kesan bahaya merokok dan skor skil penolakan ajakan merokok dinilai menggunakan satu set soal selidik sebelum intervensi, 2 minggu dan 8 minggu selepas intervensi. Ukuran ANCOVA berulang telah digunakan untuk menganalisis perbezaan skor min bagi kedua-dua kumpulan di peringkat awal dan intervensi.

Keputusan : Terdapat peningkatan yang signifikan dalam skor pengetahuan tentang merokok dan kesan bahaya merokok dan skil penolakan ajakan merokok didalam kumpulan intervensi berbanding dengan kumpulan kawalan. Bagi analisis skor min pengetahuan sebelum intervensi, tidak terdapat perbezaan yang signifikan antara skor kumpulan intervensi dan kawalan ($p = 0.713$). Sebaliknya, selepas intervensi, terdapat peningkatan skor kumpulan intervensi dan perbezaan yang signifikan antara kumpulan intervensi dan kawalan setelah mengambil kira faktor jantina [$F(df) = 15.96(1.5)$, $p < 0.001$]. Bagi analisis skor skil penolakan ajakan merokok sebelum intervensi, terdapat perbezaan statistik signifikan antara kedua-dua kumpulan ($p = 0.003$). Selepas intervensi, terdapat peningkatan skor kumpulan intervensi dan perbezaan yang signifikan dalam skor kemahiran keengganan antara intervensi dan kumpulan kawalan setelah mengambil kira faktor jantina [$F(df) 5.66(1.8)$, $p = 0.005$].

Kesimpulan : Modul pencegahan merokok ini telah meningkatkan tahap pengetahuan mengenai merokok dan kesan bahaya merokok dan skil penolakan ajakan merokok di kalangan pelajar sekolah menengah. Oleh itu, adalah digalakkan untuk menggunakan modul ini sebagai salah satu daripada modul standard semasa proses pengajaran

mengenai pengetahuan yang berkaitan dengan kesan bahaya merokok, undang-undang yang berkaitan dengan merokok serta teknik penolakan ajakan merokok terhadap pelajar sekolah menengah di Malaysia.

ABSTRACT

THE EFFECTIVENESS OF SMOKING PREVENTION MODULE TOWARDS KNOWLEDGE AND SMOKING REFUSAL SKILL AMONG SECONDARY SCHOOL STUDENTS IN KOTA BHARU, KELANTAN

Background : Currently, smoking initiation in the adolescents is becoming more common. To our knowledge, besides '*Kelab Doktor Muda*' programme, there is no other smoking prevention modules specifically targeting adolescents in Malaysia. Such modules are important to reduce the number of smoking in adolescents. Assessing the efficacy of these smoking prevention programmes is equally important to ensure the benefits are received by the adolescents.

Objectives : To study the effectiveness of the smoking prevention module towards knowledge on smoking and its harmful effects and smoking refusal skill among secondary school students in Kota Bharu, Kelantan.

Methods : A quasi experimental interventional study was conducted from August until October 2016, involving 166 participants, aged 13 to 14 years old who were non smokers. 83 students from SMK Kubang Kerian 3 were allocated to the intervention group which received the smoking prevention module. Another 83 students from SMK Ketereh were allocated to the control group which only received the smoking prevention module after the study had been completed. The knowledge on smoking and its harmful

effects and smoking refusal skill score were assessed using a set of questionnaires at baseline, 2 weeks and 8 weeks after the intervention. Repeated measure ANCOVA was used to analyse the mean score difference of both groups at baseline and after intervention.

Results : There were significant improvement in the knowledge on smoking and its harmful effects and smoking refusal skill mean score among the intervention group as compared to the control group. For the analysis of the mean score of knowledge, there was no significant difference of the baseline score between the intervention and control group ($p = 0.713$). On the other hand, after intervention, there was significant increment of the knowledge score in the intervention group with significant difference in crude mean and estimated marginal means of knowledge score between intervention and control group after controlling for sex [$F(df) = 15.96(1.5)$, $p < 0.001$]. For the analysis of smoking refusal skill score, there was significant statistical difference in mean baseline refusal skill score between the two groups ($p = 0.003$). After the intervention, there was significant increment of the refusal skill score in the intervention group with significant difference in crude mean and estimated marginal means of smoking refusal skill score between intervention and control group after controlling for sex [$F(df) 5.66(1.8)$, $p = 0.005$].

Conclusion : This smoking prevention module increased the level of knowledge on smoking and its harmful effects and smoking refusal skill among the secondary school students. Thus, it is advocated to be used as one of the standard modules to improve the current method of teaching in delivering knowledge related to harmful effects of

smoking, laws related to smoking and smoking refusal skill to the secondary school students in Malaysia.

CHAPTER 1

INTRODUCTION

Smoking or tobacco used is one of the preventable causes of mortality in Malaysia. Tobacco products used affect the users' health in many ways. The cigarettes contents, make tobacco products attractive and addictive, as well as induced toxicity to the users. This will increase the risk of chronic illnesses such as coronary artery disease, cerebrovascular disease, chronic lung disease, peripheral vascular disease, lungs and laryngeal cancer, oral cancer, oesophageal cancer and other types of cancer, such as pancreatic cancer (Centers for Disease Control Prevention, 2008). Unfortunately, most of the adolescents are not aware of these harmful consequences of the activity, making them susceptible to get involved in smoking (Freedman *et al.*, 2011).

Additionally, the non-smokers are also actually getting detrimental effects from smokers. Breathing the environmental tobacco smoke may increase risks of getting lung cancer, chronic lung disease, respiratory infections and cardiovascular disease. To make certain that diseases related to smoking will not be a major public health problem, the Ministry of Health Malaysia is directed towards reducing the smoking prevalence to half by year 2020 (Hock *et al.*, 2013). Multiple initiatives have been taken to ensure that Malaysia is able to achieve the aforementioned target. These initiatives are crucial to avert smoking initiation at an early age as a whopping 80% of adult smokers admit that they have started smoking since adolescence. Meanwhile, those who have not smoked during schooling years are less likely to commence smoking during adulthood (Hock *et al.*, 2013). In addition, studies have shown that smoking cessation is difficult once it has started and will gradually become a long-term addiction (Gervais *et al.*, 2006; Hock *et*

al., 2013). Furthermore, smoking prevention and cessation will mitigate the risk of premature death (Li *et al.*, 2010).

Despite the multitude of campaigns and programmes, the results have remained unclear and the success rates are not that impressive (Park and Drake, 2015). There are multiple factors affecting or influencing the decision of the adolescent to be involved in smoking activities. Besides the efficacy of the prevention programmes, their self-interest also acts as a determinant whether these adolescents will engage in any smoking activities or otherwise. As explained by social learning theory, adolescents are prone to try out smoking if they expect a good outcome from the deed. This expectation is normally developed through observation and personal experiences. Hence, it is quite difficult for the adolescents, especially those with low self-esteem, to steer clear from smoking when it is recognised as socially enviable and popular (Simons-Morton *et al.*, 1999). Experimentation, peer pressure, lack of restrictive laws, smoking in family, cultural norms, stress, smoking within school environments, and involvement in drugs also may intensify risks of the adolescents to start smoking and this will have an impact on the effectiveness of the smoking prevention programmes.

1.1 RATIONALE OF STUDY

It is known that smoking is a risk factor for a wide range of chronic diseases such as cardiovascular disease and peripheral vascular disease (Thyrian *et al.*, 2009). As most of us are aware, the rate of smoking adolescents in Malaysia is growing by the day. This is very alarming because an adolescent who has started smoking may find it rather difficult to quit and they also tend to be long-term hardcore smokers. They are also at risk of becoming drug addicts later on (Gervais *et al.*, 2006; Hock *et al.*, 2013). We have to bear in mind that these adolescents might be the ones who will rule the country

in the coming years. Therefore, it is very critical to help them to abstain themselves from getting involved in unhealthy activities which can be undesirable for their future.

Despite various efforts to reduce the rate of teens smoking, it appears that the number of teens who smoke is escalating every day, 9.5% to 14.2% in 2016 (Norbanee *et al.*, 2006). This may be due to the fact that these teenagers have their own perception towards smoking and this judgment have made an impact on the end result of the prevention programme. The efforts undertaken to encourage teenagers not to start smoking need to be reviewed further because not every smoking prevention programme is tailor-made for all levels of society (Park and Drake, 2015).

It is imperative to review the potency of each smoking prevention programme module to ensure that the efforts put in are not futile and to make certain that effective information have been disseminated to teens in Malaysia and specifically in Kelantan. A new smoking prevention module may be adapted and modified from '*Kelab Doktor Muda*' module to be more suited for the teenagers in order to create the necessary awareness which can be used to prevent them from smoking.

CHAPTER 2

LITERATURE REVIEW

2.1 PREVALENCE OF SMOKING AMONG ADOLESCENTS AND ITS ASSOCIATED FACTORS

The issue of smoking among secondary school students has received noticeable recognition recently as the incidence becomes significantly increased (Park and Drake, 2015). Further to that, there has been a notable decrease in the age of smoking initiation (Malmberg *et al.*, 2014). According to Global Adult Tobacco Survey (GATS), smoking is defined as ever tried cigarette smoking even only one puff in one's lifetime (Palipudi *et al.*, 2016). The majority of the smokers in the United States of America start smoking in their teenage years and about 80% of them begin their tobacco use at the age of less than 18 years old (Nor Afiah *et al.*, 2012). According to Global Youth Tobacco Survey (GYTS) 2012, overall, there are 12% of boys smoking worldwide with the highest rates in European countries and the Western Pacific, while the Eastern Mediterranean and South-East Asian countries have the lowest rates (Centers for Disease Control Prevention, 2012). Data from 61 countries by Global Youth Tobacco Survey from 2012 to 2015 showed that smoking rate among the 13 to 15 years old adolescents was 10.7% (Arrazola *et al.*, 2017).

It is known that studies on smoking among secondary school students have been widely done in Malaysia. However, it is quite alarming that the age of smoking initiation is decreasing by the evidence found from the Tobacco and E-cigarette survey among Malaysia adolescents (TECMA) 2016, in which 78.7% of the

smokers tried their first cigarette before turning 14 years old (MOH, 2016).

Surprisingly, TECMA 2016 and a study completed in 2013 disclosed that 3.5% out of 1,991 students had started to smoke before the age of 7 (Lim *et al.*, 2017; MOH, 2016). Meanwhile, the TECMA 2016 revealed that current tobacco smoker and ever smoker rates among adolescents aged 10 - 19 years old in Malaysia are 14.2% and 27.2% respectively. 14.8% of teenagers aged between 13 - 15 years old in Malaysia are current cigarette smokers, with the rates of nicotine dependency of 28.5% (MOH, 2016).

As specified by the TECMA 2016, the prevalence of cigarette smoking among adolescents aged between 13 - 17 years old in Kelantan is 12.1% (MOH, 2016). While according to another study done in 2006, the prevalence of smokers among teenagers in Kota Bharu are 7.7% with 15.4% being boys and 1.3% girls (Noor *et al.*, 2008). Regrettably, a more recent study in 2013 showed an increased number of smoking adolescents in Kota Bharu, specifically, 30% being current smokers and another 23.7% being former smokers (Lim *et al.*, 2017).

One of the highlighted concerns regarding tobacco use in secondary school students is the effects on the later involvement of other unhealthy behaviours such as drugs and alcohol consumption or abuse. These effects are well known to be important risk factors for non-communicable chronic medical conditions (Hock *et al.*, 2013; MOH, 2016). Studies have also proved the association between early smoking initiation with heavy smoking habit (Norbanee *et al.*, 2006; Park and Drake, 2015) and later use of other drugs (Hock *et al.*, 2013).

Experimental smoking is recently becoming more apparent in young adolescents. Experimental smoking is defined as an individual who ever smoked at least once, but less than 100 cigarettes in a lifetime and have not smoked in the last

30 days (Freedman *et al.*, 2011). Experimental smoking is not an issue that can be ignored as the abundance of studies proved that a person who starts smoking at an earlier age has a higher tendency to carry on smoking until their adulthood (MOH, 2016).

Multiple factors correlate with smoking in secondary school students or teenagers. As per a review article about smoking research in Malaysia, the male gender is strongly associated with smoking activities, thereby the numbers of male smokers are significantly higher than female. Among all of the associated factors, it was observed that the three major components that influenced smoking initiation or activities in adolescents are family, environment and individual factors (Al-Sadat *et al.*, 2010; Hum, 2016).

Plethora of researches revealed that tobacco use during adolescence is influenced by the smoking behaviour of the parents, siblings and friends, especially best friends (Blebil *et al.*, 2014; Hum, 2016; Nor Afiah *et al.*, 2012; Norbanee *et al.*, 2006; Vink *et al.*, 2003). The tendency to smoke when younger students have a smoking friend is comparable with the ones that have a smoking sibling who is of the same sex and age (Vink *et al.*, 2003).

The adolescents who have been exposed to smoking by family members, friends and other social contacts are comparable to the ones who have never been exposed to a smoking environment (Freedman *et al.*, 2011). It was found that smoking rates are higher among rural teenagers compared to those who live in the urban areas in Malaysia. Unfamiliarity with or disbelieve in the facts of health endangerments linked to smoking habits, activities like loitering and bullying, as well as stress, are among the important reasons why teenagers smoke (Al-Sadat *et al.*, 2010; Hum,

2016). Evidently, a religious background also plays a substantial role in determining the decision of a teenager to smoke or else (Nor Afiah *et al.*, 2012).

2.2 KNOWLEDGE AND ATTITUDE ON SMOKING PREVENTION AMONG ADOLESCENTS

According to Nicotine and Tobacco Research 2013, the level of knowledge among Malaysian adolescents on the subject of health risks related to smoking is better compared to those in Thailand (Zawahir *et al.*, 2012). The majority of the adolescents in Malaysia are aware that it is an illegal act if someone under the age of 18 were to buy, possess or smoke cigarettes. This was evidenced by data collected from TECMA 2016, in which percentage of the adolescents who realised that buying, possessing or smoking cigarettes are illegal, 70.9%, 72% and 80.4% respectively (MOH, 2016).

As per a systematic review by Centre for Disease Control and Prevention (CDC) in 2012, most of the adolescents thought that smoking is not harmful. The adolescents even thought that smoking is a norm (Freedman *et al.*, 2011). However, TECMA 2016 showed that 89% of the Malaysian adolescents who participated in the survey were well informed of the detrimental effects of smoking towards their health. 32% of these adolescents believed that it is difficult to quit once one has started, while another 17.7% thought it is relatively easy to stop smoking (MOH, 2016).

Self-interest or desire and staying in an environment where others are smoking, also play important roles for them to start smoking (Norbanee *et al.*, 2006). Nevertheless, some adolescents be of the view that smoking is able to elevate the

image of the smoker to become more appealing and attractive. Additionally, these youths think that smoking will enhance their mood, boost their self-esteem and popularity. Some others believe that smoking gives a gratifying feeling to the smoker, especially during social gatherings (Hesketh *et al.*, 2001; MOH, 2016). They even contend that smoking calms the nerves while a very little number of them think that smoking helps them to lose weight. Surprisingly, wanting to lose weight is a factor that contributes to the high prevalence of smoking among female teenagers in the West (Hesketh *et al.*, 2001).

The most striking facts from TECMA 2016 was they revealed that 2.2% of the non-smoking adolescents felt that they might get the enjoyment if they start smoking (MOH, 2016). This small number cannot be ignored as we know that it is not easy to quit smoking and a smoking teenager will influence their friends to join them smoking as well.

As assumption, knowledge and attitude are related to each other in determining the likelihood of an adolescent to start smoking. It has been proven that negative attitude and perception towards smoking reduce the possibilities of smoking initiation among teenagers (Abidin *et al.*, 2014).

2.3 SMOKING PREVENTION PROGRAMMES

Smoking prevention programme is one of the tools that have been used to decrease the smoking prevalence in teenagers. Globally, there are numbers of smoking prevention programme that specifically aimed to increase the level of knowledge related to smoking and its harmful effects and smoking refusal skill among the adolescents. However, it is crucial to understand that not every

preventive programme would suit the population. The efficacy and benefits should be further studied after the implementation to the target groups (Hock *et al.*, 2013).

In 1994, CDC came up with a guideline for school health programmes to inhibit tobacco use and addiction. The guideline specified that the school-based smoking prevention programme is planned for students from kindergarten level up to the seventh grade. CDC recommended specific training for teachers and also encouraged parents to take part in the programme (Centers for Disease Control Prevention, 1994). Besides the common school-based intervention activities like health education classes, community-based activities such as summer camp and group-based activities, an internet-based intervention programme was also introduced. This activity includes delivering messages through websites with interactive videos and stories. The initiative is found to be advantageous and useful as most teenagers spend more time on the internet nowadays (Park and Drake, 2015).

It appears that there have been numerous smoking prevention programmes conducted around the globe. An extensive national anti-smoking media campaign was launched on February 9, 2004 in Malaysia. The well-known campaign, which was called '*Tak Nak*' (Say No) was apparently intended to reduce the number of smokers, especially teenagers. It provided accurate information to raise their apprehension and self-awareness on the danger of smoking (Zawahir *et al.*, 2012). Prior to that, the Malaysian government had also introduced a regulation called Control of Tobacco Products Regulation 1993 which banned direct tobacco advertisements, the sale of cigarettes to adolescents aged under 18, and forbade them from buying tobacco products or smoking (Assunta and Chapman, 2004).

However, to our knowledge, the only smoking prevention programme targeting the adolescents is '*Kelab Doktor Muda*' (Young Doctors Club) programme, which is formulated for primary and secondary schools students in Malaysia had been in place since 1989 with the collaboration of the Ministry of Education and the Ministry of Health. It is a school-based programme which aims to produce students who are skilled in practising healthy lifestyle through some training modules. The implementation of the activities is based on the concept of 'from the students, for the students, to the students'. The smoking intervention programme is also actively applied through '*Kelab Doktor Muda*' (*Portal Rasmi Bahagian Pendidikan Kesihatan*). However, to date, there have been no studies done to evaluate the efficacy of this programme specifically on smoking prevention.

Thailand had carried out more policy-based intervention / implementation. In Thailand, the smoking prevention activities include banning of tobacco advertisements, tobacco tax implementation, increment of tobacco price, implementation of smoke-free areas, stringent rules of cigarette purchasing by adolescents less than 18 years old and health messages on tobacco prevention. In 2006, the government imposed a new requirement for all cigarette packs to include graphic images illustrating the deleterious effects of smoking on the smokers' health. This regulation was later correspondingly adopted in Malaysia (Zawahir et al., 2012).

Another Asian country that had introduced school-based smoking prevention programme is Taiwan. The programmes in the country were tested and proven to be beneficial for the adolescents. Throughout the study, the adolescents were divided into three groups, in which the first group received a school-wide and a classroom-based programme, the second group received only classroom-based programme

meanwhile the third group received no intervention at all. In the school-wide programme, the children were involved in formulating a strategy to create a smoke-free environment and organising anti-smoking activities. The classroom-based programme was composed of six 45-minute sessions which enlightened the adolescents on the harmful effects of smoking, chemical contents of cigarettes, laws related to smoking and also smoking refusal techniques (Lee et al., 2007).

In India, a smoking prevention programme called Mobilizing Youth for Tobacco Related Initiatives (MYTRI) was proven to be helpful in increasing knowledge and refusal skill among the adolescents. This was further significantly reduced the smoking initiation rate among the adolescents. MYTRI involved few components of educational methods which included a classroom curriculum, preparing school posters, preparing postcard for the parents and peer-led activities. These were graded activities which took up to 15 hours in four months (Bate *et al.*, 2009).

Meanwhile, in Italy, a school based smoking prevention programme called *Luoghi di Prevenzione* (LdP) had significantly increased the level of knowledge on smoking and its harmful effects among the respondents. LdP consisted of 4 activities which included class / lab based activity, novel reading session, peer-led activity and school enforcement (Carreras *et al.*, 2016). Another school based smoking prevention module called *Eigenständig werden 5+6* (Becoming independent 5+6) was implemented in the school in Germany. This programme was found to be beneficial in increasing the level of knowledge about smoking and its harmful effects among the early adolescents. However, this programme did not exclude non-smokers from their activities. The module used interactive teaching methods which included quiz sessions and role play activities which delivered by trained teachers (Maruska *et al.*, 2016).

In the year of 2000, a de-normalisation campaign called the 'truth' campaign was launched in the United State of America and was not directed by any tobacco companies. The aim was to make adolescents aware of the tacky strategies of tobacco industry players, the truth about addiction and the repercussions of smoking on health and social aspects. This is to allow adolescents to make informed choices about tobacco use. The 'truth' campaign provided interesting activities for the youths, including cinema advertising, online activities, promotions via websites, television and radio as well as branded 'truth' apparels. This campaign was found to be beneficial and close to the adolescents' heart. Annual interview sessions with the total of 8,904 adolescents aged 12-17 years old revealed that the 'truth' campaign significantly reduced the number of smoking initiation among the adolescents (Farrelly *et al.*, 2009).

Another influential smoking intervention programme is 'The Real Cost' campaign which was implemented and studied from 2014 to 2016. This Food and Drug Administration's (FDA) campaign was meant to prevent smoking initiation among adolescents aged 11 to 18 years old. It emphasised on the cost of cigarettes, detrimental effects of smoking on the health and physical appearance as well as the aftereffects of addiction through series of advertisements via television, internet, magazines and movie theatres. It was shown that this campaign was able to prevent smoking initiation of an estimated 348,398 adolescents (Farrelly and Matthew, 2017).

A noteworthy smoking prevention module was implemented among the fourth and fifth grade students from six public schools in Michigan. In this single lesson smoking prevention programme, the trained health staffs delivered the module to the students. The students were given information on knowledge related to law,

smoking effects on health, contents of cigarettes and information related to smoking refusal skills. It was found that this study was managed to significantly increase the level of knowledge on issues related to smoking among the early adolescents (Brown *et al.*, 2007).

Last but not least, in Tanzania, a storybook entitled ‘Eglin Long-Horn of Nightshade County’, written by a health education specialist was used as a smoking prevention strategy tool among the adolescents. The aim was to increase the knowledge on smoking harmful effects among the adolescents which will reduce the rate of smoking experimentation among them. This storybook was prepared with a teachers’ guide to educate the children. It enlightened the readers about the effects of smoking on one’s health, cosmetic effects of smoking and second hand smoke exposure effects (St Germain *et al.*, 2017).

Thus, it is clearly understood that there are multiple smoking prevention programme available globally. Some are proven to be significantly given positive effects to the adolescents and some are unassertive as they are not yet studied by research.

2.4 REFUSAL SKILL IN SMOKING AMONG ADOLESCENTS

Refusal skill in smoking means the ability of a person to refuse the pressure to be involved in smoking activities or the desire to smoke. Refusal skill is the second most important factor after self-efficacy in determining the end point of the smoking habit among the youths (Karimy *et al.*, 2013). There have been many programmes that demonstrate smoking refusal skills. However, the effectiveness of the programmes has yet to be substantiated.

Most of the prevention programmes provide various verbal responses to refrain the pressures from participating in unwanted activities or behaviours. Verbal responses that are often used and mentioned in literatures include making a firm statement against the behaviour (“I do not smoke!”), simple statement (“No, thanks.”), giving an excuse (“It is illegal to smoke.”), changing the issue of the discussion or invitation (“Did you watch the show last night?”) or non-verbal response, such as walking away from the group without saying anything. Other studied method which has been proven effective in increasing refusal skills in adolescents include observation through role-play scenarios (Nichols *et al.*, 2010). Evidently, refusal skills deficit will lead to an increased use in tobacco-related activities and other negative activities such as drug use. Therefore, specific strategies in teaching and training the adolescents to dismiss the idea and decline the offer from peers are very important (Nichols *et al.*, 2006).

In Malaysia, despite having a myriad of smoking prevention programmes such as '*Kelab Doktor Muda*' and '*Tak Nak*' campaign, there have been no research done thus far to properly assess their effectiveness, specifically on smoking refusal skill. Even though the '*Tak Nak*' campaign was proven to give positive impact on level of knowledge about smoking and reducing smoking rates (Zawahir *et al.*, 2012), this campaign did not target on educating the adolescents on smoking refusal technique.

Meanwhile, in Taiwan, a government's school based smoking prevention programmes had significantly increased the refusal skills among adolescents who participated in the study (Lee *et al.*, 2007). A smoking prevention module in Italy was designed not only to educate the adolescents on knowledge related to smoking deleterious effects, but on the refusal techniques as well. This module consists of several activities including role play and peer led activity that enlighten the

adolescents on the proper approach to refrain from a smoking invitation (Carreras *et al.*, 2016). Another school based prevention programme that educate the adolescents on smoking refusal skills is *Eigenständig werden 5+6* (Becoming independent 5+6) that has been executed in the school in Germany. This module was proven to effective in strengthening the smoking refusal skill among the adolescents which subsequently has reduced the smoking initiation risks in the adolescents (Maruska *et al.*, 2016).

In the United States of America and various other European countries, the Truth campaign, the 'Real Cost' campaign and school-based intervention programme which was designed by CDC have been actively used and assessed. These multitude of programmes have significantly increased the knowledge and self-efficacy of the adolescents (Farrelly *et al.*, 2009; Thrasher *et al.*, 2004). Additionally, a smoking prevention module in Michigan was successfully educate the adolescents on the effective techniques to be used to decline smoking invitation and how to constructively express their intention not to get involved in this activity.

To summarise, although there are other building blocks in the initiation of smoking such as knowledge, attitude and self-esteem, self-efficacy and refusal skill are constantly associated to smoking initiation. It is similarly important to ascertain the aforementioned refusal skill as it also makes an impact to the prevalence of smoking initiation among teenagers (Karimy *et al.*, 2013). Hence, these elements should be considered as influencing factors in the planning of any smoking prevention programme to determine its effectiveness.

2.5 CONCEPTUAL FRAMEWORK

This study's main outcome was to assess the effectiveness of the new smoking prevention module on improving knowledge and refusal skill on smoking among secondary school students in Kota Bharu, Kelantan. Health education on smoking is one of the important elements that affect the knowledge of smoking and the refusal skills. Increase in knowledge and strengthen of refusal skill will decrease the likelihood of the adolescents from starting smoking.

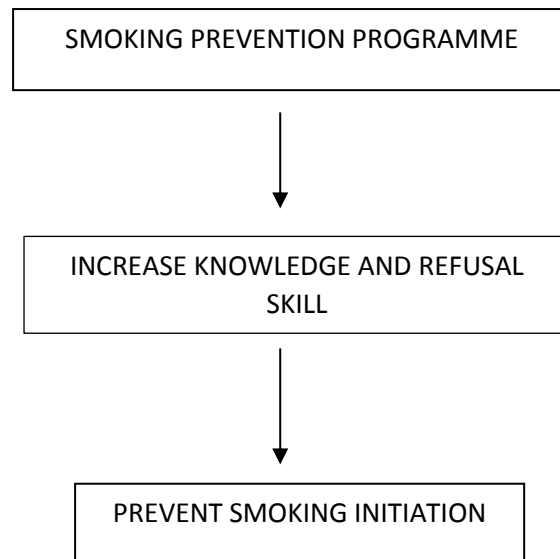


Figure 2.1 Conceptual framework

CHAPTER 3

OBJECTIVES AND RESEARCH HYPOTHESES

3.1 GENERAL OBJECTIVE

The study aims to determine the effectiveness of smoking prevention module on knowledge and smoking refusal skills among secondary school students in Kota Bharu, Kelantan.

3.2 SPECIFIC OBJECTIVES

The specific objectives of this study are as follows:

1. To compare the mean score of knowledge on smoking and its harmful effect between control and intervention group at baseline, two weeks and eight weeks after intervention; and
2. To compare the mean score of smoking refusal skill between control and intervention group at baseline, two weeks and eight weeks after intervention

3.3 RESEARCH HYPOTHESES

The research hypotheses of this study are as follows:

1. The level of knowledge on smoking and its harmful effect is higher in intervention group compared to the control group at two weeks and eight weeks after intervention.

2. The smoking refusal skill level is higher in intervention group compared to the control group at two weeks and eight weeks after intervention.

3.4 OPERATIONAL DEFINITION

1. Knowledge on smoking and its harmful effect : knowledge that the adolescents gain from the smoking prevention module which may reduce the risk of smoking initiation (Zawahir *et al.*, 2012).

2. Smoking refusal skill : techniques used to resist the pressure from getting involved in smoking activities or the desire to smoke (Karimy *et al.*, 2013; Lee *et al.*, 2007).

CHAPTER 4

METHODOLOGY

4.1 STUDY DESIGN

This is a Quasi experimental intervention study.

1. Control group is defined as secondary school students who do not receive any smoking prevention module.
2. Intervention group is defined as secondary school students who receive the smoking prevention module.

4.2 STUDY DURATION

The duration of this study was two months with the commencement of pilot study on 28th of August 2016. The subject recruitment was done for the control and intervention group on 30th of August 2016 and 1st of September 2016 respectively. The data collection was then carried out from 4th of September 2016 until 31st of October 2016.

4.3 STUDY AREA

This study was conducted in two different secondary schools in Kota Bharu, Kelantan. Sekolah Menengah Kebangsaan Ketereh was selected as control group and Sekolah Menengah Kebangsaan Kubang Kerian 3 was selected as intervention group.

4.4 POPULATION AND SAMPLE

4.4.1 Reference population

Secondary school students in Kelantan.

4.4.2 Source of population

Secondary school students in Kota Bharu, Kelantan.

4.4.3 Study population

Secondary school students from the selected secondary schools in Kota Bharu, Kelantan. In the duration of the study, there were 48 secondary schools in Kota Bharu, Kelantan. However, only three out of these 48 schools administered '*Kelab Doktor Muda*' namely SMK Tanjung Mas, SMK Kota and SMK Dewan Beta. These 3 schools were excluded from this study. Sekolah Menengah Kebangsaan Ketereh was selected as control group and Sekolah Menengah Kebangsaan Kubang Kerian 3 was selected as intervention group. The distance between these two schools was approximately 20 km.

The following criteria were applied in this study:

- Inclusion criteria
 1. Form one and form two students.
- Exclusion criteria
 1. Special class students.
 2. Smokers (self-reported).

Only form 1 and form 2 students were chosen to be included in this study to avoid discrepancy between the early and late adolescent's knowledge and perception. This was due to the fact that early adolescent group (10-14 years old) have a safe and clearer space to come to terms with cognitive, emotional, sexual and psychological transformation. It is particularly important to give early adolescents all of the information they need to protect themselves against high risk behaviour (Herrmann and McWhirter, 1997).

4.4.4 Sampling method

The schools were purposively selected to reduce risk of contamination of the smoking prevention module. The list of students from both schools were obtained from the school administration. Total of 1980 students were screened at initial stage. The study respondents who fulfilled the inclusion and exclusion criteria were randomly selected using simple random sampling which was computer-generated based on the number of the eligible respondents. Parental consents and student informed assents were obtained from each respondent and their parents or guardian.

4.4.5 Sample size calculation

The sample size calculation was done for each objective. The one that yielded the biggest sample size was taken as the study sample size.

Objective 1 :

The sample size calculation to compare the mean score of knowledge on smoking and its harmful effects between the control and intervention group. The calculation was done using PS software (independent t-test) for comparing 2 means.

α = level of significance (0.05)

β = 0.14

power = $1 - \beta$ (0.8)

σ = Standard deviation of outcome variable

δ = The expected difference in variable score between the control group and intervention group (Expert opinion).

m = The ratio of control group: intervention group = 1

For knowledge on smoking, standard deviation of knowledge score of 1.87 (28) and detectable difference of 1 and non-response rate of 20%, the calculated sample size was **67 subjects per group**.

Objective 2 :

The sample size to compare the mean score of smoking refusal skill between the control and intervention group. The calculation was done using PS software (independent t-test) for comparing 2 means.

α = level of significance (0.05)

β = 0.14

power = $1 - \beta$ (0.8)

σ = Standard deviation of outcome variable

δ = The expected difference in variable score between the control group and intervention group (Expert opinion).

m = The ratio of control group: intervention group = 1

For smoking refusal skill, standard deviation of refusal skill score of 12.46 (29) and detectable difference of 6 and non-response rate of 20%, the calculated sample size was **83 subjects per group**.

Since there was difference between calculation of objective 1 and 2, the largest sample size calculated, 83 was used for this study.

4.5 RESEARCH TOOLS AND IMPLEMENTATION

1. Package for the intervention group
 - a) Smoking prevention module
 - b) Knowledge and refusal skill questionnaires
2. Package for the control group
 - a) Smoking prevention module

4.5.1 Package for the intervention group

The intervention group was using a smoking prevention module.

Module development

This modified smoking prevention module was adapted from Kelab Doktor Muda's module and further revised by a group of Universiti Sains Malaysia's who are experts in the field and was prepared in the Malay language. The experts composed of four Family Medicine Specialists including one who are expert in nicotine addiction, one Medical Education lecturer, a Community Medicine Specialist and a Psychiatrist. The altered module suits our goal to educate the students the harmful effects of smoking and smoking refusal skills.

Two video sessions were added to ensure this new smoking prevention programme will provide additional value as compared to the '*Kelab Doktor Muda*' module. The video development process composed of few stages. The first stage involved searching literatures on the suitable and important information to suit the aim of these video sessions. This stage is important to ensure content validity. The wordings